

## **Dedication**

*-To my parents who enlighten my way with their passion, golden wisdom,  
and blessings.*

*-To my teachers who always offer an unlimited support and help.*

*-To my brother and sisters who give the courage, strength and power to go  
forward in my career.*

*-To my friends in past, present, and future.*

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## الخلاصة

هذه دراسة وصفية ، تحليلية أجريت في قبيلة الحلفاوين السودانية هدفت لتحديد نسب تردد الأليل (الانتجين) ، والأنماط الظاهرية لل ABO , K idd و العامل الريصي . لقد استغرقت الدراسة ثلاثة شهور (من أبريل الي يوليو، ٢٠٠٧). هدفت الدراسة لتكوين قاعدة معلومات لهذه القبيلة لتحديد مدى التداخل بينها وبين القبائل الاخرى وتساعد في عمليات نقل الدم. استخدمت الدراسة الزمر الوظيفية لل Kidd كعلامات للهوية لتحديد الاصل المشترك المحتمل . أخذت الموافقة من الأشخاص الذين سحب منهم الدم وقد تم أحاطتهم بأهداف البحث. تم تجميع عينات من مائة شخص من القبيلة بحيث لا توجد بينهم صلة قرابة . تم تجميع كل عينة في وعاء سعة ٢.٥ مل يحتوى على مادة مانعة لتجلط الدم (EDTA). تم فحص جميع العينات لمعرفة الزمر الوظيفية لل ABO و العامل الريصي باستخدام طريقة الشريحة. Kidd بطريقة حديثة تسمى جل (مانعة النفاذية) ومن ثم تم تحديد الزمر الوظيفية و تحديد نسب التشابه بين هذه القبيلة و القبائل السودانية والدول الاخرى بواسطة قانون جـاكرد للتشابه.

وأظهرت نتائج الدراسة أن نسبة تردد الزمر الوظيفية للدم التابعة لنظام ABO. أن الزمرة الوظيفية O كانت الأكثر تردداً بنسبة (45%) تليها A بنسبة (31%) ، ثم B بنسبة (21%) وقد كانت الزمرة الوظيفية AB هي الأقل تردداً بنسبة (3%).

وفي نظام ال Kidd تبين ان الزمر الوظيفية Jka هي الأكثر تردداً وقد كانت نسبتها (70%) وقد كانت الزمر الوظيفية Jkb هي الأقل تردداً بنسبة (10%).

نجد أن هنالك تشابه في الزمر الوظيفية لنظام ABO ونظام العامل الريصي بين القبائل السودانية التي تعيش في منطقة جغرافية واحدة وهذا قد يكون بسبب التزاوج بين تلك القبائل، وأن الاختلاف الذي وجد في بعض القبائل السودانية يمكن أن يكون بسبب الترحال وعدم التقيد بمنطقة جغرافية محدودة.

# Abstract

This prospective and descriptive cross-sectional study, aimed to determine the frequency of ABO, Rh(D) and Kell antigens, and phenotypes, among Al halfaween Sudanese tribe. Also aimed at established ABO, Rh(D) and Kidd blood group baseline data for this Sudanese tribe to determine the interaction between this tribe and other Sudanese tribes which will be useful in the blood transfusion.

The study was conducted during three months (April to July, 2007), Following informed consent, a total of hundred venous blood samples were collected from unrelated individual into 2.5 ml EDTA containers. All samples were tested for ABO and Rh(D) antigens by using the slide agglutination techniques, and Kidd antigens were tested by the immune-diffusion gel technique.

The results obtained showed that, The O group was most common frequently occurred ( 45% ), followed by group A ( 31%), group B was found ( 21% ) and least common was group AB ( 3%).

The Rh(D) antigen was (87%).

JKa was (70%) and JKb was (10%).

There was a marked similarities between the Sudanese tribes that lived in the same geographical area this could be due to intermarriage, while the difference that seen in some tribes could be most probably due to the wandering nature of these tribes.

# List of abbreviations

Ab: Antibody.

.Ag: Antigen.

AIHA: Autoimmune hemolytic anemia.

cDNA: Complementary Deoxyribonucleic acid.

CHO: Carbohydrates.

CML: Chronic myeloid leukemia.

DNA: Deoxyribonucleic acid

Fy Ag: Duffy associated glycoprotein.

GPB: Glycoprotein-B.

H-chain: Heavy chain.

HDN: Hemolytic Disease of The Newborn.

ID: Immunodiffusion.

IgA: Immunoglobulin A.

IgD: Immunoglobulin D.

IgE: Immunoglobulin E.

IgG: Immunoglobulin G.

IgM: Immunoglobulin M.

ISBT: International Society of Blood Transfusion.

L-Chain: Light chain.

Le: Lewis.

Lu: Lutheran.

LW: Landsteiner and Wiener.

mRNA: Messenger ribonucleic acid.

PCR: Polymerase Chain Reaction.

RBC: Red blood corpuscle.

Rh Ag: Rhesus Antigen

Rh: Rhesus blood group system.

RNA: Ribonucleic acid.

WHO: World Health Organization.

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